STEPTOE & JOHNSON

ATTORNEYS AT LAW

1330 CONNECTICUT AVENUE, N.W.
WASHINGTON, D.C. 20036-1795

(202) 429-3000
FACSIMILE: (202) 429-9204
TELEX: 89-2503

PHOENIX, ARIZONA
CITIBANK TOWER

TELEPHONE: (602) 266-6610
FACSIMILE: (602) 274-1970

STEPTOE & JOHNSON INTERNATIONAL
AFFILIATE IN MOSCOW, RUSSIA

TELEPHONE: (011-7-502) 220-2220

ALFRED M. MAMLET
(202) 429-6205

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

August 10, 1993

DELIVERY BY HAND

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: CC Docket No. 92-166

Dear Mr. Caton:

Enclosed for filing on behalf of Motorola Satellite Communications, Inc. ("Motorola") are an original plus nine (9) copies of Motorola's Views of the Essential Elements of a Successful Spectrum Sharing Plan for "Big LEOs." Please associate this filing with the above-referenced proceeding.

Copies of this submission have been served on this date to all parties of record in this proceeding in accordance with the attached certificate of service.

If there are any questions concerning this filing please contact the undersigned.

Respectfully submitted,

Alfred M. Mamlet

Alfred M. Mamlet

Counsel for Motorola Satellite Communications, Inc.

Enclosures

No. of Copies rec'd 0+9
List A B C D E

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of:	
Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to Mobile-Satellite Service and Radio Determination Satellite Service in the 1610-1626.5 MHz and 2483.5-2500 MHz Bands.	CC Docket No. 92-166

MOTOROLA'S VIEWS OF THE ESSENTIAL ELEMENTS OF A SUCCESSFUL SPECTRUM SHARING PLAN FOR "BIG LEOS"

MOTOROLA SATELLITE
COMMUNICATIONS, INC.

Michael D. Kennedy
Director, Regulatory Relations
Motorola Inc.
1350 I Street, N.W.
Suite 400
Washington, D.C. 20005
(202) 371-6900

Philip L. Malet
Alfred M. Mamlet
Steptoe & Johnson
1330 Connecticut Avenue, N.W.
Washington, D.C. 20036
(202) 429-6239

James G. Ennis
Barry Lambergman
Fletcher Heald & Hildreth
1300 N. 17th Street
11th Floor
Rosslyn, VA 22209

Its Attorneys

August 10, 1993

Summary

Motorola Satellite Communications, Inc. ("Motorola") hereby submits its views as to the rules and policies to govern the licensing and provision of Mobile-Satellite Service ("MSS") and Radio Determination Satellite Service ("RDSS") in the 1610-1626.5 MHz and 2483.5-2500 MHz bands. The Commission must act decisively and with all deliberate speed by issuing a comprehensive Notice of Proposed Rulemaking setting forth proposed rules on these matters.

Approximately four months ago the Commission completed the Negotiated Rulemaking phase of this proceeding, and subsequently issued a "Report of the MSS Above 1 GHz Negotiated Rulemaking Committee." In that Report, a significant number of technical issues were addressed. Consensus was reached on many of these issues. In those areas where consensus was not reached, a substantial amount of material was accumulated, presented and summarized for the Commission with the differences between the parties clearly delineated. Motorola submits that the Commission now has before it a substantial record from which to fashion rules and polices to govern the licensing and provision of MSS/RDSS service in the subject bands.

In particular, Motorola believes that the Commission should propose as a spectrum sharing solution the concepts set forth in the original "Elements of a Consensus" plan first put forward by the Facilitator of the Negotiated Rulemaking Committee and the FCC Staff during the last few weeks of the Committee's

deliberations. With relatively few modifications, Motorola believes that this plan represents the best of the three sharing solutions proffered by the Facilitator/FCC Staff during the Negotiated Rulemaking proceeding.

In Motorola's view, an acceptable spectrum sharing plan is one that:

(1) Permits a licensee to use either FDMA/TDMA or FDMA/CDMA modulation techniques;

(2) Permits bi-directional operation in at least the 1616-1626.5 MHz band;

(3) Avoids a finding of mutual exclusivity and the delays and problems associated with comparative hearings and possible auctioning of spectrum;

(4) Permits successful permittees to obtain access to additional spectrum as unsuccessful permittees fail to proceed with their proposed systems in a timely manner;

(5) Does <u>not</u> preclude use of the lower portion of the L-band by any successful licensee if appropriate sharing rules are implemented; and

(6) Recognizes the need to allocate additional MSS spectrum both domestically and internationally for LEO systems.

The original "Elements of a Consensus" plan contained these features.

Only slight modifications need to be made to that plan in order for it to be fully acceptable to Motorola. Rather than assigning spectrum to permittees as soon as they launch their first satellites, Motorola believes that a better approach would be to assign spectrum only when a system can satisfactorily demonstrate that it is ready, willing and able to provide commercial MSS service. Even then, commercial systems will not need their full spectrum assignment at the start of operations. In Motorola's view, the Commission should assign an operator only a portion of its full spectrum share in proportion to the percentage of its satellite constellation that is operational. Once a full constellation is launched and operational, the system operator would be entitled to its full spectrum share.

In addition, Motorola believes that, regardless of the spectrum sharing plan adopted by the Commission, threshold standards, as well as construction and launch milestones that MSS permittees must adhere to strictly, should be established in order to ensure that only fully qualified applicants receive authority to construct their proposed systems. For example, Motorola proposes that the Commission require each applicant to demonstrate its current ability to finance its entire system. Motorola also believes that in light of the limited amount of spectrum available, each applicant must demonstrate that its proposed system will provide universal coverage and full-time service to the entire United States. Lastly, Motorola urges the Commission to license only low-Earth orbit systems in these bands

in order to maximize the likelihood of real competition amongst satellite systems.

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MOTOROLA'S VIEWS OF THE ESSENTIAL ELEMENTS OF A SUCCESSFUL SPECTRUM SHARING PLAN FOR "BIG LEOS"

Motorola Satellite Communications, Inc. ("Motorola") respectfully submits its views as to the rules and policies to govern the licensing and provision of Mobile-Satellite Service ("MSS") and Radio Determination Satellite Service ("RDSS") now that the "Report of the MSS Above 1 GHz Negotiated Rulemaking Committee" in the above-captioned proceeding has been released.[1/]

1/ Motorola is aware that another applicant, Loral Qualcomm Satellite Services, Inc. ("LQSS"), has met with Commission staff to discuss what it believes the service rules should be for the bands under consideration in this proceeding. See Letter of May 23, 1993, from Dale Gallimore to Ms. Donna R. Searcy (describing a May 18, 1993 ex parte presentation by LQSS). Since then, however, the Commission staff has declined to discuss these issues with other applicants, and has indicated it prefers written submissions on the subject. Accordingly, Motorola offers its suggestions as to the essential elements of an acceptable spectrum sharing plan.

I. BACKGROUND

This past January, the Commission established a Federal Advisory Committee in an attempt to resolve the differences between the applicants for MSS and/or RDSS service in the 1610-1626.5 MHz and 2483.5-2500 MHz bands. Issues considered by this Committee included intraservice and interservice sharing. While substantial progress was made during the deliberations of this Committee, especially in the areas of interservice sharing, feeder links and intersatellite links, consensus was not reached on fundamental issues relating to the sharing of spectrum in the user link bands.[2/] Motorola proposed a band segmentation approach to sharing spectrum which would have allowed all of the proposed systems to proceed and compete in the marketplace irrespective of the modulation or access technique chosen by the applicants.[3/] Other applicants proposed a full band interference sharing concept which would have mandated Code Division Multiple Access ("CDMA") across the 1610-1626.5 and 2483.5-2500 MHz bands.[4/] This suggested approach was (and still is) unacceptable to Motorola because it would not permit Motorola

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[2/] The Committee's fifty-page Report contains specific recommendations and technical rules on a number of important issues. It also includes in its Attachments descriptions of two approaches to intraservice sharing of the user link spectrum which were promoted by the various applicants. A consensus was not reached, however, on either of these approaches.

[3/] See Report, at Attachment 2.

[4/] See Report, at Attachment 1.

to provide the quality of service its business plan requires and that it believes the public will demand.

Near the end of the Committee's deliberations, its Facilitator, in consultation with the Commission's representative on the Committee, offered several plans entitled "Elements of a Consensus" for reaching a compromise solution.[5/] However, there was insufficient time at that point for the participants to explore fully whether any of these proposals, or some combination of them, could form the basis for a consensus before the mandated deadline for the Committee's work. As a result, the Committee was unable to reach consensus on any of these plans.

The next step is for the Commission to issue a Notice of Proposed Rulemaking which sets forth proposed rules and policies for licensing the current group of applicants.[6/]

[5/] See Report, at Addendum 1. Motorola as well as several of the other members of the Committee submitted their written comments on the first "Elements of a Consensus" plan to the Facilitator. These comments are also included in this Addendum.

[6/] If the Commission is undecided as to whether a particular rule or policy should be adopted, it could propose alternative approaches and accept comments on all of them. Such an approach is not without precedent. See, e.g., Rules to Allocate Spectrum for, To Establish Rules and Policies Pertaining to, the Use of Radio Frequencies in Land Mobile Satellite Service for Various Common Carrier Services, 50 Fed. Reg. 8149 (Feb. 28, 1985), Second Report and Order, 2 FCC Rcd. 485 (1987), aff'd in part, rev'd on other grounds in part, Aeronautical Radio, Inc. v. FCC, 928 F.2d 428 (D.C. Cir. 1991). The APA merely requires that an agency provide published notice of its proposed rulemaking and include "either the terms or substance of the proposed rule or a description of the subjects and issues involved." 5 U.S.C. § 553(b)(3) (1988). So long as the content of the final rule adopted by the Commission is a "logical outgrowth" of its rulemaking proposal, adequate notice will be deemed to have been

(continued...)

Toward that end, in Section II of this pleading, Motorola offers its views on the essential elements of a sharing plan. It believes the original "Elements of a Consensus" plan, with some minor modifications, represents the best of the three sharing solutions proffered by the Facilitator/FCC Staff during the Negotiated Rulemaking.

Threshold standards were not considered during the Negotiated Rulemaking proceeding. Motorola believes that, regardless of the spectrum sharing plan that is adopted, threshold standards should be established. In Section III of this pleading, Motorola proposes some threshold standards for consideration, as well as some proposed minor modifications to the original "Elements of a Consensus" plan.

Speed in issuing the Notice of Proposed Rulemaking is important. One of the supposed benefits of the Negotiated Rulemaking proceeding was that it would speed up the process of preparing a Notice of Proposed Rulemaking because, even if consensus was not reached on all issues, many peripheral issues would be resolved and the choices on the remaining issues would be clarified. Unfortunately, so far the Negotiated Rulemaking has paid no such dividend.

Motorola respectfully requests the Commission to make every effort to issue a Notice of Proposed Rulemaking by this

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6/ (...continued)
given to the public. See United Steelworkers of America v. Marshall, 647 F.2d 1189, 1221 (D.C. Cir. 1980), cert. denied, 453 U.S. 913 (1981).

October. Applications have been pending before the Commission for almost three years. Motorola, for one, has its financing and personnel in place. The only thing Motorola lacks is regulatory approval. Meantime, the rest of the world is not waiting for the Commission. Inmarsat is moving ahead with its Inmarsat-P system. There is simply no more time to spare.

II. THE ESSENTIAL ELEMENTS OF A SHARING PLAN ARE BEST REFLECTED IN THE ORIGINAL "ELEMENTS OF A CONSENSUS" PROPOSAL

In Motorola's view, an acceptable spectrum sharing plan is one that:

(1) Permits a licensee to use either FDMA/TDMA or FDMA/CDMA modulation techniques;

(2) Permits bi-directional operation in at least the 1616-1626.5 MHz band;

(3) Avoids a finding of mutual exclusivity and the delays and problems associated with comparative hearings and possible auctioning of spectrum;

(4) Permits successful permittees to obtain access to additional spectrum as unsuccessful permittees fail to proceed with their proposed systems in a timely manner;

(5) Does not preclude use of the lower portion of the L-band by any successful licensee if appropriate sharing rules are implemented; and

(6) Recognizes the need to allocate additional MSS spectrum both domestically and internationally for LEO systems.

The original "Elements of a Consensus" plan contained these features.

A. No Need for any Modulation Requirements

The Commission should not impose any access or modulation techniques on the applicants which might inhibit their ability to design and operate systems in the manner that they deem most appropriate. For the uplinks, two basic modulation and access techniques have been proposed by the applicants: FDMA/TDMA and FDMA/CDMA. As Motorola explained during the negotiated rulemaking phase of this proceeding, these fundamentally different technologies will have a significant effect upon the types of services that MSS/RDSS systems are capable of providing and the overall availability of such services. Motorola has referred to such technological choices as reflecting different "visions" of the services to be provided by the applicants. For example, Motorola believes high link reliability through a LEO satellite system operating on discrete frequencies with large link margins is required to provide global handheld telephone service. Such a system design requires, in Motorola's view, an FDMA/TDMA modulation scheme.

Motorola accepts that some of the other applicants do not share the same vision that Motorola does. Other applicants should be permitted to implement their own business plans by using other modulation and access techniques if they desire.

The Commission should therefore adopt service rules which allow both FDMA/TDMA and FDMA/CDMA modulation techniques to proceed since only through actual operating experience in the marketplace will one or more systems succeed. Such an approach to licensing is consistent with the Commission's general policies in the domestic satellite area where licensees are given flexibility in the technical designs of their systems.[7/] It is also consistent with the Commission's proposed rules in the non-voice, non-geostationary orbit mobile satellite service ("NVNG MSS") proceeding.[8/]

B. Bi-Directional Operations Must Be Permitted

In its MSS allocation proceeding, the Commission has proposed that bi-directional MSS operations be permitted on a secondary basis in the 1613.8-1626.5 MHz band in accordance with the results reached at the 1992 World Administrative Radio

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7/ See Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service, 3 FCC Rcd. 6972 ¶ 2 (1988); Domestic Fixed-Satellite Service, 88 F.C.C.2d 318 (1981).

8/ See Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Non-Voice, Non-Geostationary Mobile-Satellite, CC Docket No. 92-76, FCC 93-28, at ¶ 7 (released Feb. 10, 1993).

Conference ("WARC 92").[9/] This secondary allocation was originally proposed by the United States at that Conference. Any acceptable sharing plan must permit the operations of bi-directional systems, such as the IRIDIUM™ system, in all or a portion of this band.

During the Committee's deliberations, Motorola presented several technical reasons as to why it needs to operate in the 1616-1626.5 MHz band on a bi-directional basis. In order to meet its business plan and serve the handheld satellite telephone market, Motorola must operate with relatively high link margins and power flux densities ("PFD") from its satellites. The L-band does not have any domestic or international PFD limits associated with MSS or RDSS space-to-Earth operations, and the part of the L-band that Motorola has proposed to use (1616-1626.5 MHz) has virtually no fixed or other services which must be coordinated in order to avoid interference. On the other hand, the IRIDIUM™ system cannot use the S-band for its downlinks due to existing PFD coordination triggers in that band, as well as the large number of fixed microwave links that, in Motorola's view, present insurmountable frequency sharing problems for the IRIDIUM™ system.[10/]

[9/] See Amendment of Section 2.106 of the Commission's Rules to Allocate the 1610-1626.5 MHz and the 2483.5-2500 MHz Bands for Use by the Mobile-Satellite Service, Including Non-geostationary Satellites, 7 FCC Rcd at 6418 ¶¶ 28-29 (1992).

[10/] In addition, ISM interference, primarily from microwave ovens, would, in Motorola's view, unacceptably limit signal

(continued...)

C. Mutual Exclusivity of Applications Should Be Avoided

Adoption of any of the "Elements of a Consensus" proposals would avoid a finding of mutual exclusivity among the current group of applicants, since under each of the plans all qualified applicants would have an equal right to receive construction permits and licenses.[11/] Thus, under all of the plans, each qualified applicant would be authorized, but not required, to construct its system over the entire user link bands. Motorola would also be permitted to build its system using secondary downlinks in the L-band. The assignment of spectrum would await construction and launch of the systems.

Such an outcome would have at least two beneficial effects. First, avoiding mutual exclusivity would obviate the potential need for a costly and time consuming comparative hearing to choose the best qualified applicant or applicants. Second, and equally important, avoidance of mutual exclusivity would eliminate the possibility that this spectrum would be

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10/ (...continued)
penetration of MSS systems in most urban areas. See IWG2 Report § 6.16.

11/ A comparative hearing is only required where the grant of one bona fide application results in the dismissal of another bona fide application simultaneously pending before the Commission. See Ashbacker Radio Corp. v. FCC, 326 U.S. 327 (1945); see also, Telocator Network of America v. FCC, 691 F.2d 525 (D.C. Cir. 1982) (Need for comparative hearings obviated where Commission indicated that it would award a license to every eligible licensee.)

auctioned to MSS applicants.[12/] MSS and RDSS services that are predominantly designed to serve worldwide markets, that will use internationally allocated frequencies, and that will require licenses from other countries to operate are not good candidates for competitive bidding. Spectrum auctions for U.S. licensees would establish an unfortunate precedent that could trigger a wave of auctions in other countries, and, thereby, dramatically increase the implementation costs of a global system. A further consequence of auctions is the potential harm to U.S. competitiveness by imposing costs on U.S. licensees not borne by their international competitors, and by creating the potential for similar payment schemes in other countries that could be used to discriminate against U.S. systems (e.g., auctions could be applied to privately-owned but not state-owned systems). Such

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12/ Title VI of the Budget Reconciliation bill ("Communications Licensing and Spectrum Allocation Improvement") only grants the Commission authority to use competitive bidding when mutually exclusive applications are accepted for filing for any initial license or construction permit. See 47 U.S.C. § 309(j)(1). Moreover, this legislation specifically recognizes that the Commission shall not be relieved of its "obligation in the public interest to continue to use engineering solutions, negotiation, threshold qualifications, service regulations, and other means in order to avoid mutual exclusivity in application and licensing proceedings." See 47 U.S.C. § 309(j)(6)(E). In the related House Report, it is further noted that

> The ongoing MSS (or 'Big LEO') proceeding is a case in point. The FCC has and currently uses certain tools to avoid mutually exclusive licensing situations, such as spectrum sharing arrangements and the creation of specific threshold qualifications, including service criteria.

H.R. 2264 (May 25, 1993).

repercussions would place U.S. licensees at a serious competitive disadvantage, especially if Inmarsat proceeds with its plans for a global personal communications system. Finally, auctions could undermine the coordination process for international MSS systems.

D. Assignment of Spectrum to Systems

Although Motorola did not propose it, Motorola believes the approach to assigning spectrum contemplated by the original "Elements of a Consensus" proposal is the best, overall, of the three plans suggested by the Facilitator and the FCC Staff, given the apparent initial availability of only 10.5 MHz of L-band spectrum.[13/] Under that plan, the first system to become fully operational would be permitted to use all 10.5 MHz of the L-band (or 16.5 MHz if the lower 6 MHz became available). When a second system becomes fully operational, that system would divide the spectrum evenly with the first. As succeeding systems become operational, all operational systems would divide the spectrum on a pro-rata basis. By allowing systems to construct over the entire spectrum, and channelizing each system by frequency division (FDMA/TDMA or FDMA/CDMA) -- which all of the applicants have proposed -- individual system operations can contract (as

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13/ As indicated below, Motorola disagrees somewhat with the timing contemplated in this plan for assigning spectrum to permittees.

new entrants become operational) or expand (as systems fail to meet their milestones) as the need arises.

Motorola further believes that under any frequency assignment plan, bi-directional systems must be assigned spectrum starting from the top end of the 1616-1626.5 MHz band. Such assignments are necessary to minimize the potential for interference from the downlink operations of bi-directional systems to the Radio Astronomy Service operating in the 1610.6-1613.8 MHz band. In addition, placing bi-directional systems at the top of the band is consistent with the Commission's proposed secondary allocation for bi-directional operation in the 1613.8-1626.5 MHz band. Applicants with FDMA/CDMA systems do not propose to operate bi-directionally and can avoid interference from their uplinks to Radio Astronomy sites during periods when radioastronomers are observing in the 1610.6-1613.8 MHz band through relatively modest protection zones.[14/]

Motorola also supports the original "Elements of a Consensus" proposal to adjust spectrum assignments periodically to reflect actual system traffic loading once two or more systems become fully operational. There are several possible ways to reapportion spectrum over time, including using a formula based on spectrum usage, as suggested by the Facilitator. Motorola previously suggested a formula that would reassign spectrum

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[14/] See Report at §§ 5.1.2, 5.2.2.1.

periodically among operational systems on the basis of actual billed minutes.

In addition, Motorola does not object to a plan which would allow operational CDMA systems to share their spectrum assignments based upon some interference sharing concept as long as such spectrum assignments are made on a per system basis. In other words, assuming four FDMA/CDMA systems are licensed, but only one is successfully launched, that single system cannot be permitted to control four-fifths of the 10.5 MHz of available L-band spectrum. Only independent fully operational systems should be permitted to pool their spectrum.

The other "Elements of a Consensus" proposals, in Motorola's view, do not offer as good a combination of incentives and policies for the expeditious development of MSS/RDSS service. For example, under the "Start Small and Grow" proposal (Option A), permittees would be assigned spectrum before their systems become operational. Such an approach does not provide an incentive for the prompt construction and launch of satellites. It also encourages dilatory tactics and litigation by licensees trying to retain control of spectrum assignments even if their systems fail to meet construction milestones. Ultimately, the public interest is not served if valuable spectrum lies fallow when fully operational systems need additional spectrum to provide service. Perhaps most important, from Motorola's viewpoint, the "Start Small and Grow" plan does not initially

give Motorola -- or most of the other applicants -- enough spectrum for a viable system.

The third "Elements of a Consensus" plan (Option B), proposes an initial partition of the L-band by modulation scheme. Now that it appears only 10.5 MHz of L-band spectrum will initially be usable by MSS systems, this concept also has significant disadvantages. Although Motorola proposed such a plan when it appeared that 16.5 MHz of spectrum was available, there is a serious question as to whether sufficient spectrum would be available if there is only 10.5 MHz to share and more than one FDMA/TDMA system becomes operational. For example, if only half of 10.5 MHz, or 5.25 MHz, were allocated for FDMA/TDMA systems, Motorola could not share its portion of the band with any other FDMA/TDMA system and still have access to enough spectrum to be economically viable. Since some applicants may not yet have committed to a modulation scheme, the amount of spectrum available to each applicant is uncertain.

E. The Benefits of Utilizing the 1610-1616 MHz Band Should Be Made Available to All Licensees

The original "Elements of a Consensus" plan correctly envisioned the equitable sharing of any additional spectrum that might become available if GLONASS were to move down in frequencies as recommended by the Committee.[15/] This could be

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15/ See Report § 5.2.2.5.1; DG2B Report § 3.1.1.

accomplished simply by reassigning the greater amount of available spectrum (e.g., 16.5 MHz) to the operational systems on the same basis that the 10.5 MHz was assigned, and shifting the unidirectional systems down the band. Thus, more spectrum would be assigned to all operational systems on an equal basis.

F. The Need for More MSS Spectrum

All of the plans put forward by the Facilitator and the Commission representative recognize that licensing decisions and spectrum assignment policies would be much easier if additional spectrum were available for MSS/RDSS LEO systems. In preparation for WARC-92, the Commission recognized the growing demand for MSS and the increased pressures to accommodate both U.S. and foreign MSS systems in the limited spectrum available for these services.[16/] The Commission's Industry Advisory Committee, as well as a CCIR Joint Interim Working Party (8/15), have also determined that there will be a need for significantly more MSS spectrum worldwide in order to satisfy communications requirements from aeronautical, maritime, land mobile and hand portable platforms. Their estimates ranged from a "minimum" of 44.8 MHz of additional MSS spectrum in each direction up to a "likely"

16/ See An Inquiry Relating to Preparation for the International Telecommunication Union World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, Second Notice of Inquiry, 5 FCC Rcd. 6046, 6055 (1990).

amount of 175.4 MHz of new MSS spectrum in each direction.[17/] Motorola estimates that IRIDIUM™-type systems alone will need up to 90 MHz of usable MSS spectrum by 2013.

Thus, each Facilitator/FCC Staff proposal called for the U.S. government to seek to obtain additional spectrum for MSS allocations at future ITU world radio conferences. Motorola supports this position. The Commission should explore all possible options for additional MSS spectrum, both domestically and internationally. Several bands have already been identified for future MSS use, such as the Metsat/Metaids bands and the Emerging Technologies bands, and additional bands should be identified and allocated to MSS.

Additional MSS spectrum should be reserved as expansion spectrum for successful LEO MSS systems in the current group. It is clear that the amount of usable spectrum in the 1610-1626.5 MHz and 2483.5-2500 MHz bands will not be sufficient to meet the needs of future generations of LEO MSS/RDSS systems operating in these bands.

17/ See An Inquiry Relating to Preparation for the International Telecommunication Union World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, Supplemental Notice of Inquiry, 6 FCC Rcd. 1914, 1915 (1991).

III. MODIFICATIONS WHICH WOULD IMPROVE THE ORIGINAL ELEMENTS OF A CONSENSUS PLAN, INCLUDING ESTABLISHMENT OF THRESHOLD QUALIFICATIONS STANDARDS

The original "Elements of a Consensus" plan was intended to outline the basic principles that could be used to license operators in the 1610-1626.5 MHz and 2483.5-2500 MHz bands. While Motorola agrees with this essential framework, there are additional features which will enhance the fundamental principles underlying that plan. In addition, a few components of the original plan should be reconsidered in light of certain implementation problems.

A. Establishment of Threshold Qualifications Standards

In Motorola's view, the Commission should establish financial, technical and legal threshold standards to ensure that the spectrum is used in a way that maximizes the public interest in speedy implementation of new services, competition, and best practicable service. This requirement is particularly important for LEO MSS/RDSS systems which will require a substantial investment and significant technical expertise. There is ample precedent for adopting qualification standards while processing a closed group of applications as long as all applicants are given an opportunity to amend their applications to meet any new